Intrusion Prevention System (IPS)

Intrusion Prevention System (IPS) technology protects your network from cybercriminal attacks by actively seeking and blocking external threats before they can reach potentially vulnerable network devices.

World Class Next Generation IPS Capabilities

Today, sophisticated and high volume attacks are the challenges that every organization must recognize. These attacks are evolving, infiltrating ever-increasing vectors and complex network environments. The result is an urgent need for network protection while maintaining the ability to efficiently provide demanding services and applications.

FortiOS's IPS functionality is an industry-proven network security solution that scales up to over 200 Gbps of in-line protection. Powered by purpose-built hardware and FortiASICs, FortiOS is able to achieve attractive TCO while meeting performance requirements. IPS is easy to set up, yet offers feature-rich capabilities, with contextual visibility and coverage. It is kept up-to-date by research teams that work 24 hours a day worldwide, in order to detect and deter the latest known threats as well as zero-day attacks.

Key Features & Benefits

High Performance IPS, powered by FortiASIC	Low latency and high capacity ensure business applications are not affected while security is enforced.
Best-in-class security with superior coverage	Protects critical digital resources from both internal exploits and external cybercriminals, even if sophisticated attacks are crafted.
Backed by FortiGuard Labs that deliver real-time protection	Maintains up-to-date and proactive protection against latest known threats and newly discovered hacking techniques while allowing time for organizations to patch vulnerable systems.

Highlights

- Validated best-in-class security and capacity with proven coverage and high performance.
- Comprehensive protection provided by a signatures-based IPS engine, protocol anomaly scanning, and DDOS mitigation
- Flexible deployment options and actionable implementations for a wide array of network integration and operation requirements.

FEATURES

Tested and Proven Protection

Not only have FortiGates been deployed in some of the largest enterprises in the world since 2002, FortiOS IPS components and FortiGuard IPS signatures are periodically tested and certified by well-known external labs. For example, Fortinet's FortiGate 3000D earned the highest ratings for Security Effectiveness, blocking 99.9 percent of exploits in the recent NSS Labs DCIPS test. These independent certifications ensure that solutions delivered to customers are of the highest standards in performance, coverage, and accuracy.

Real-Time & Zero-day Protection

The FortiGuard Intrusion Prevention Service (IPS) provides customers with the latest defenses against stealthy network-level threats through a constantly updated database of known threats and behavior-based signatures.

FortiGuard IPS service quick facts

- Over 10,000 signatures consisting of 18,000 rules
- Approximately 470,000 network intrusion attempts resisted per minute
- About 1,000 rules are updated or added per week
- Over 300 Zero-day vulnerabilities discovered to date

This update service is backed by a team of threat experts and a close relationship with major application vendors. The best-in-class team also uncovers significant zero-day vulnerabilities continuously, providing FortiGate units with advanced protection ahead of vendor patches.

Uncompromised Performance

The FortiASICS Content Processor (CP) accelerates content processing, which is traditionally done completely by the CPU. The CP reduces the resources required by the CPU when matching an incoming file against the signature database, thus improving system performance and stability.

Protocol Decoders and Anomaly Detection

Protocol decoders are required to assemble the packets and detect suspicious, nonconforming sessions that resemble known attacks or are non-compliant to RFC or standard implementation.

FortiOS offers one of the most comprehensive arrays of protocol decoders in the industry, providing customers with significantly wide coverage in all kinds of environments.

Pattern & Rate-Based Signatures

The pattern signature matching technique is essential in IPS implementation due to its high level of precision and accuracy. FortiOS offers administrators robust pattern signature selection using filters based on severity, target, operating system, application, and protocol. Each of the 10,000+ signatures has a direct link to its detailed entry on the threat encyclopedia and CVE-ID references. After selection, administrators are able to assign associated actions such as monitoring, blocking, or resetting the session.

Rate-based IPS signatures protect networks against application-based DoS and brute force attacks. Administrators can configure nearly 30 rate-based IPS signatures and tune them to their needs. Threshold (incidents per minute) and an action to take when the threshold is reached can be assigned to each signature. If the action is set to block, then a timeout period can be set so that the block is removed after a specified duration.

DoS and DDoS Mitigation

DoS policies can help protect against DDoS attacks that aim to overwhelm server resources. In FortiOS, the DoS scans precede the policy engine at the incoming interfaces, thus eliminating unnecessary sessions from the firewall process and state table entry during a surge of attack traffic. This helps to safeguard the firewall from overloading and allows it to perform optimally.

FortiOS DoS policies can be configured to detect and block floodings, port scans, and sweeps. Administrators can set baselines for the amount of concurrent sessions from sources or to destinations. The settings utilize thresholds and can be applied to UDP, TCP, ICMP, IP, and SCTP.

Network interfaces associated with a port attached to a Network Processor (NP) can be configured to offload anomaly checking, further offloading the CPU for greater performance. Some of the anomaly traffic dropped includes LAND attacks, IP protocol with malformed options, and WinNukes.

Quarantine Attacks

FortiOS offers sophisticated automatic attack quarantine capabilities which allow organizations to proactively prevent further attacks from known attackers over a predefined duration. Quarantining by duration can be used to protect potentially vulnerable servers until more permanent defense.

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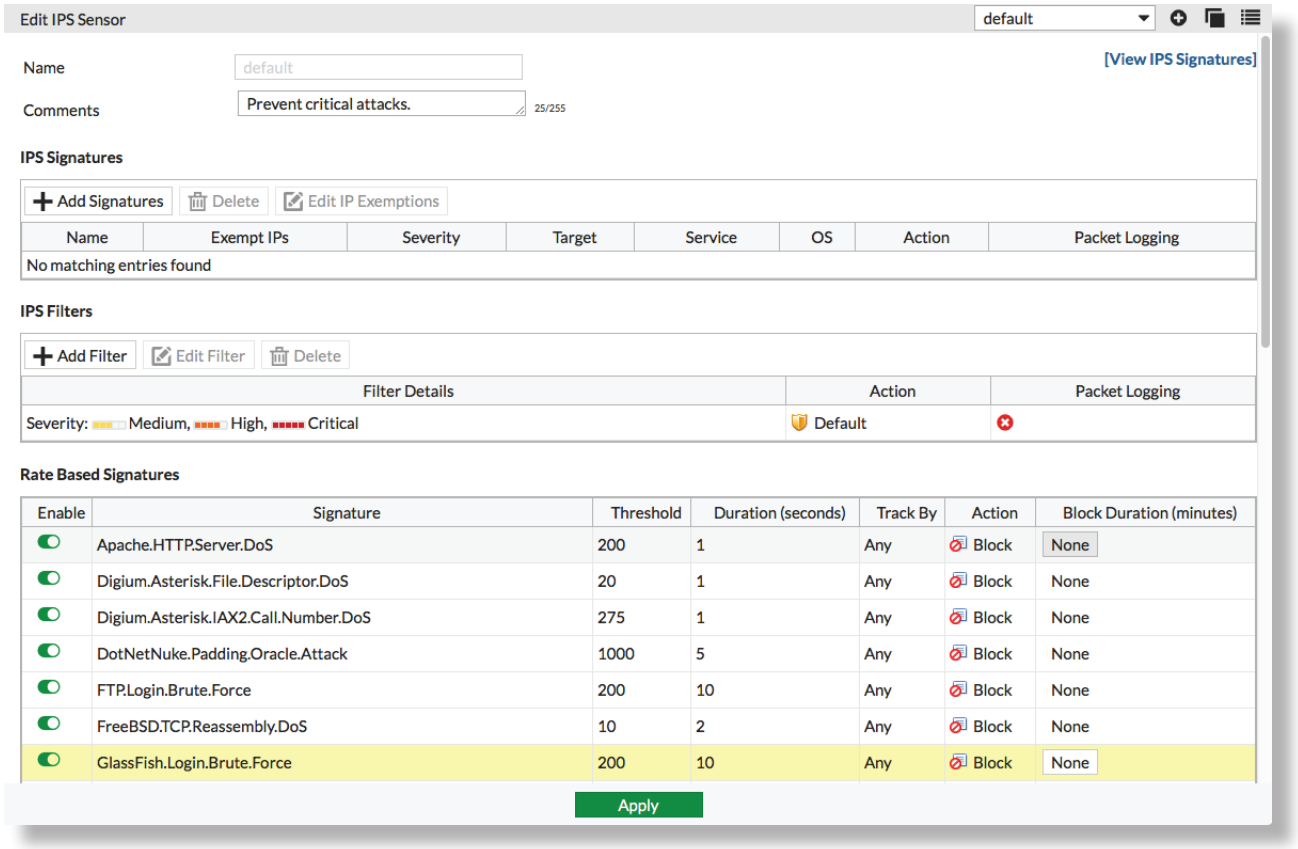
Packet Logging

Administrators may choose to automatically perform IPS packet logging, which saves packets for detailed analysis when an IPS signature is matched. Saved packets can be viewed and analyzed on the FortiGate unit or by using third-party analysis tools. Packet logging is also useful in determining false positives.

Custom Signatures

Custom IPS signatures can be created to further extend protection. For example, you can use custom IPS signatures to protect unusual or specialized applications, or even custom platforms from known and unknown attacks.

Organizations may use FortiConverter to easily convert Snort signatures for FortiOS use.



FortiGate® - End-to-end Next Generation Firewall

- **Best Validated protection**
  FortiGate-based next generation firewall solutions are certified and validated by third-party authorities and programs such NSS Labs, ICSA, Virus Bulletin, and AV Comparatives for superior security effectiveness.
- **HIgh Speed and Flexible Connectivity**
  FortiGate appliances are powered by FortiASICs and designed on purpose-built integrated architecture that provides extremely high throughput and exceptionally low latency. They also offer variety of interfaces for today's network.
- **Broad Product Offerings**
  The FortiGate product family scales from desktop units for remote branch offices to high-end platforms for service providers and data centers while virtualized appliances support a wide range of hypervisors and public cloud infarstructure.

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Resistant Against Evasions

Evasion techniques attempt to fool the protocol decoders in IPS products by crafting exotic network streams that would not be handled or reconstructed by the decoders, yet still be valid enough for the target recipient to process. Robust IPS engine is capable of handling both common evasions and sophisticated AETs (Advanced Evasion Techniques) deployed by hackers such as IP Packet Fragmentation, TCP Stream Segmentation, RPC Fragmentation, URL & HTML Obfuscation, and other protocol-specific evasion techniques.

Intrusion Detection Mode

In out-of-band sniffer mode (or one-arm IPS mode), IPS operates as an Intrusion Detection System (IDS), detecting attacks and reporting them but not taking any action against them. In sniffer mode, the FortiGate unit does not process network traffic and instead is connected to a spanning or mirrored switch port, or a network tap. If an attack is detected, log messages can be recorded and alerts sent to system administrators.

Traffic Bypass

Since most IPS deployments are in transparent inline mode, active traffic bypass is often desired until normal operation of the device resumes. Some FortiGates offer inbuilt active bypass interfaces while others may use external bypass devices such as the FortiBridge. Administrators are also offered with software fail-open option to tackle instances where the IPS engine fails.

Monitoring, Logging, and Reporting

FortiOS empowers organizations to implement security best practices that require continuous examination of their threat status and adaptation to new requirements. The FortiView query widgets provide useful analysis data with detailed and contextual session information, which can be filtered, ranked, and further inspected. System events can also be archived via logs, which in turn can generate useful trending and overview reports.

ADDITIONAL REFERENCE

Resource	URL
FortiOS Handbook - The Complete Guide	http://docs.fortinet.com/fortigate/admin-guides
Fortinet Knowledge Base	http://kb.fortinet.com/
FortiGate Product Page	https://www.fortinet.com/products-services/products/firewall.html

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INSIDE-IPS-DAT-R2-201608